

# ***The Present Situation Of the Policy On Fluorocarbons In Japan***

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## **The main policy on refrigerant in Japan**

- **At the following 3 stages, achievement of best mix of combinations of national legislation and voluntary plans by auto industries**

**Stage1. Charging at production line**

**Stage2. During operation**

**Stage3. Recovering and destruction of**

**refrigerant from ELVs**

# **Voluntary Action Plans by Industry Associations(Stage1,2)**

- **Established by five associations including JAMA , following METI Guidelines in 1998**
- **Industrial Structural Council reviews the progress every year.**
- **Achievements to date**
  - ① **Reduced Charge**
  - ② **Reduced emissions during production**
  - ③ **Reduced emissions during operation**

# ① Reduced Charge

(Original Target: 20% reduction in 2010 from 1995 level)

## Charge for newly launched vehicles (221 models)

- Passenger vehicle: 810g in 1995  $\Rightarrow$  400 g in 2004
- Light vehicle: 500g in 1995  $\Rightarrow$  290g in 2004
- Bus : 6,800g in 1995  $\Rightarrow$  5,400g in 2004

Average charge for vehicles in operation:

700g in 1995 553g in 2004

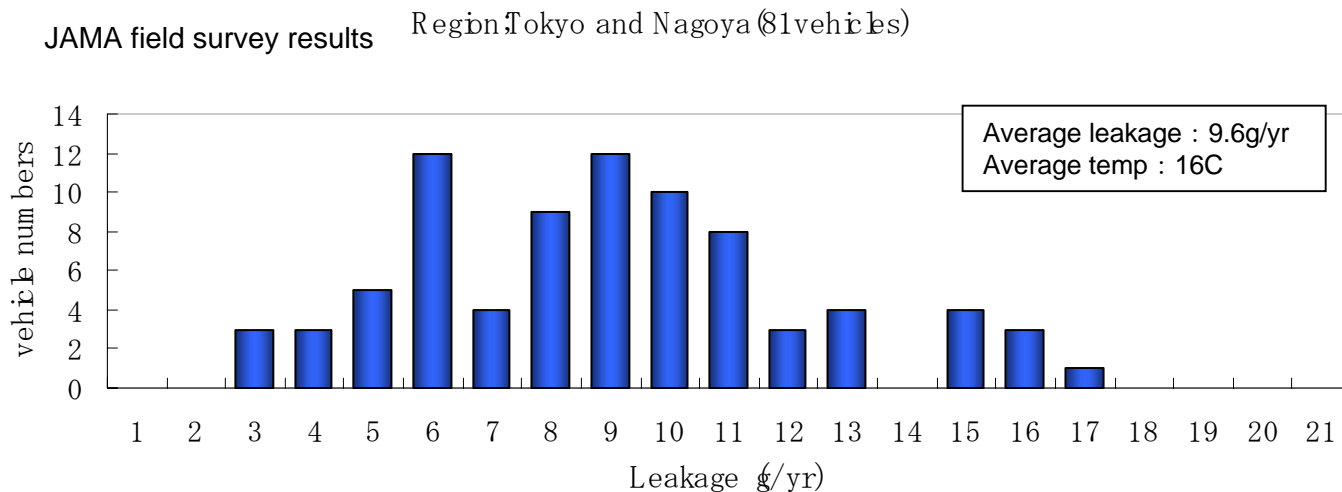
## **② Reduced emissions during production**

**3.5g per vehicle**

**The leakage volume can be controlled at a low level by utilizing the “interlocking system” to fill up.**

### ③ Reduced emissions during operation (Improved containment and better services)

- Average leakage rates (regular leak) : 15g per year
- Current theoretical leakage rate : 10g per year
- Actual average leakage rate (according to the field survey by JAMA):9.6g per year



# Design Improvement

**Evaporator**

Integration of evaporator and expansion valve



Reduce the fittings numbers

**Compressor**

Mechanical seal



Lip seal

**Condenser**

Integration of a condenser and a receiver



Reduce the fittings

**Fitting on Plumbing**

Rectangle seal



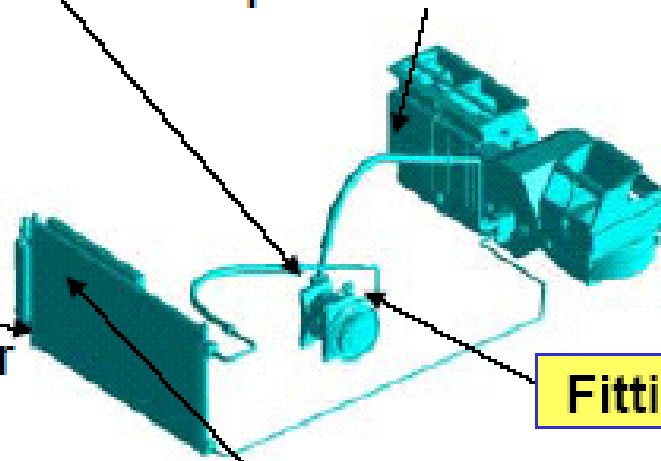
Axis seal

**Hose**

Rubber type



Plastic barrier type



# ***Development of Recovery of Refrigerant from ELVs in Japan(Stage3)***

## **➤ Voluntary Plan (- 2002)**

**Refrigerant industry, auto industries and local governments established recover/destruction system at regional level (“Fluorocarbon Recovery Promotion Board”)**

## **➤ The Fluorocarbons Recovery and Destruction Law (Oct. 2002 - Dec. 2004)**

## **➤ The ELV Recycling Law (Jan. 2005 -)**

# ***The Fluorocarbons Recovery and Destruction Law***

**Voluntary Plan with no legal force was not satisfactorily effective. Therefore a need for legislation arose and the law was enforced.**

## **Purpose of the Law**

- **Restrain the emissions of Fluorocarbons to protect ozone layer and prevent global warming**
- **Require mandatory recovery and destruction of end-of-life fluorocarbons by placing responsibilities on relevant parties**

# ***Result of Fluorocarbons Recovery and Destruction Law***

- **Before the law, Industry sectors etc recovered fluorocarbons voluntarily. 129MT of fluorocarbons were destroyed in 2001.**
- **Since start of the law, 1,610MT of fluorocarbons were recovered and 990MT were destroyed.**
- **The law systematized recovery and destruction of fluorocarbons before ELV Recycling Law.**

# ***ELV Recycling Law***

## **Purpose of the Law**

- **Create and implement a new recycling system which ensures the proper recycling and appropriate treatment of ELVs**
- **Prevent illegal dumping and inappropriate treatment of ELVs by assigning mandatory roles to the manufacturers / importers and other parties involved**

# ***3 obstacles in the treatment of ELVs***

## **1. Automobile Shredder Residue (ASR)**

- **Dwindling landfill site for waste**

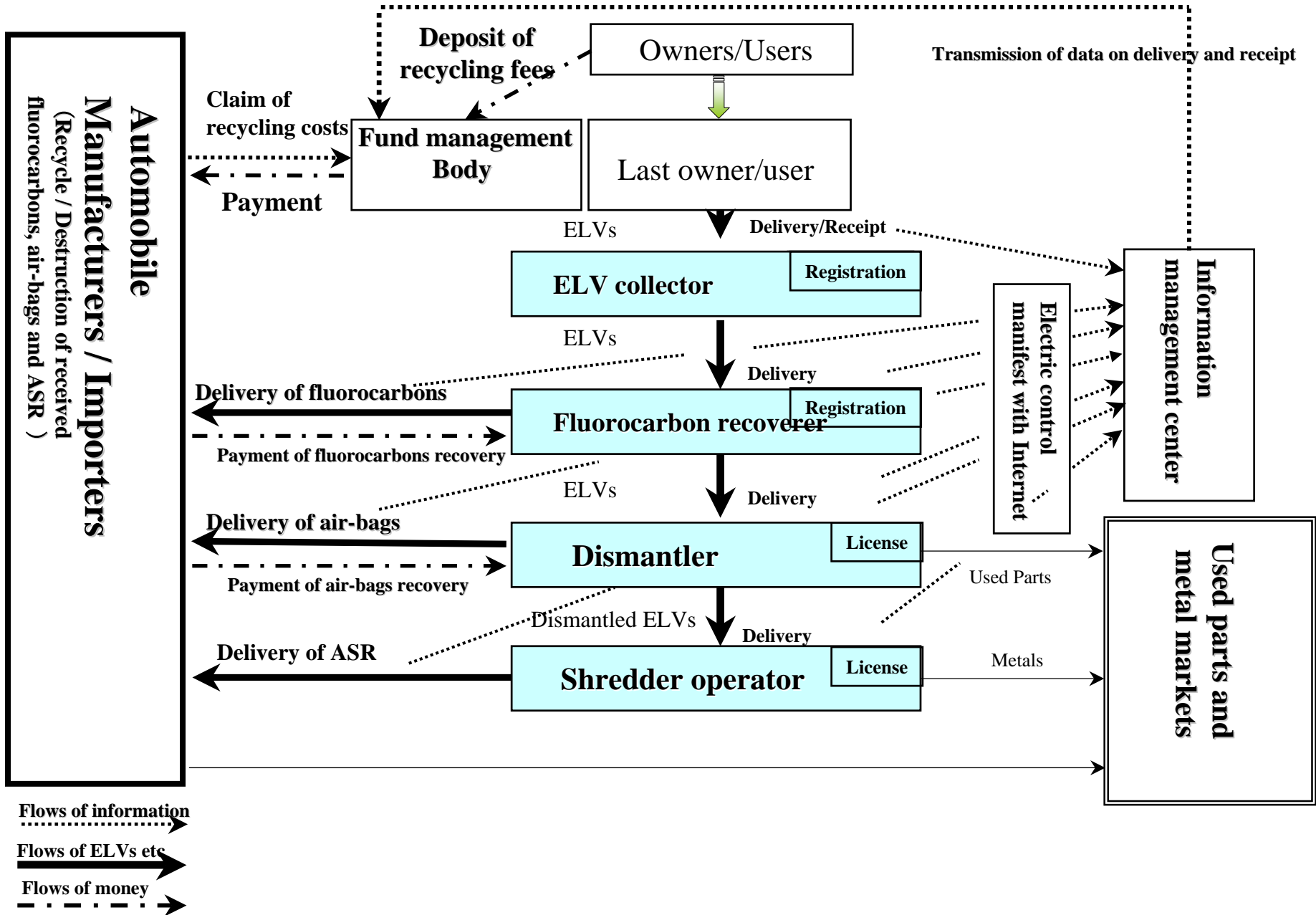
## **2. Fluorocarbons**

## **3. Air-bags**

- **Explosive included in air-bags to be treated properly**

**Automobile manufacturers/importers accept and destroy/recycle three items according to the standard**

# Overview of the ELV Recycling Law



# ***Introduction of “Electric Control Manifest”***

- **“Electric Control Manifest” system is introduced to ensure that all relevant parties properly do their duties.**
- **All relevant parties have to report receipt and delivery of each ELVs and etc. with the internet**
- **The Electric Control Manifest system shares the data of vehicles with the registration data base, and information of dismantled vehicles is as a condition for the deregistration of an ELVs**

# ***Treatment of Fluorocarbons in the ELV Recycling Law***

- **22,457 fluorocarbon recoverers (needs to be registered) exist in Japan**
- **Receipt of ELV from an ELVs collector**
- **Recovery of fluorocarbons from ELVs and delivery of recovered fluorocarbons to automobile manufacturers/importers**
- **Delivery to ELVs to a dismantler**
- **Report of receipt and delivery of ELVs/fluorocarbons through “electric control manifest system**

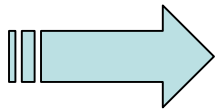
**Automobile manufacturers/importers have to receive and destroy fluorocarbons from fluorocarbon recoverers.**

# ***Present situation of Treatment of fluorocarbons from ELVs in Japan***

- **For a year since start of the law(2005) , the number of ELVs with MAC were 2.2mil. This figure is 129% of the number of receipt in 2003 F/Y .**
- **572MT of fluorocarbons were destroyed. This figure is 138% of the destruction amount in 2003 F/Y.**
- **Treatment of fluorocarbons from ELVs in Japan is getting on the ground.**

# ***CONCLUSION***

- **In the closed circle of the ELV Recycling Law, fluorocarbons from ELVs are properly recovered and destroyed.**
- **Voluntary action plans by industry association with an annual review by the government have been quite effective in areas where manufacturers have responsibility, for example, R&D to minimize HFC leakage during production.**



**In this way, the harmful influences by the release of fluorocarbons to the air is prevented in spite of using them.**